

Sandia Field Inspector Is Commended For Quick Actions After Fatal Explosion

Bill D. Yoder of Field Inspection Division 2341 was commended recently by the Wurlitzer Company for his actions during an explosion and fire at the company's North Tonawanda plant.

Five persons were injured in the fire. One died later. The AEC announced damage costs of \$231,000.

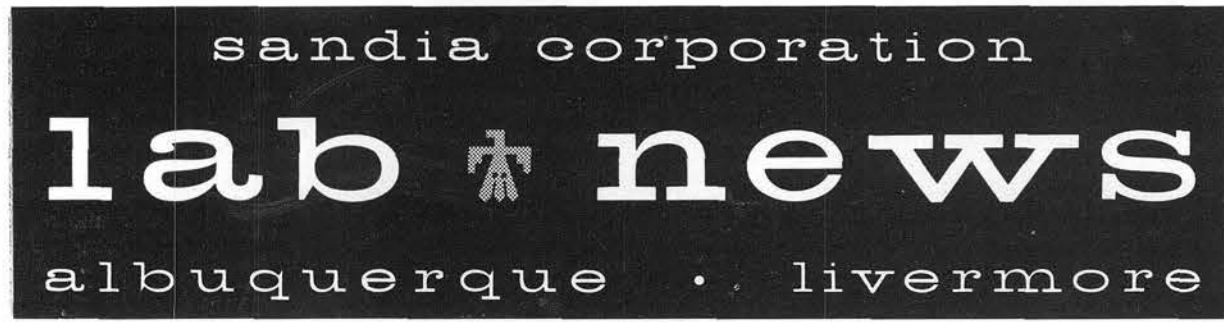
Bill, a Sandia field inspector for the New England area, was in

the Wurlitzer plant at the time of the accident. An instant before the explosion, he had stepped from the room in which it occurred.

Immediately after the accident, he returned to the room, assisted the injured, helped extinguish the fire, and checked to see that there was no danger of a second explosion. The following day, he assisted in determining the cause

of the fire, and in assessing the resulting damage.

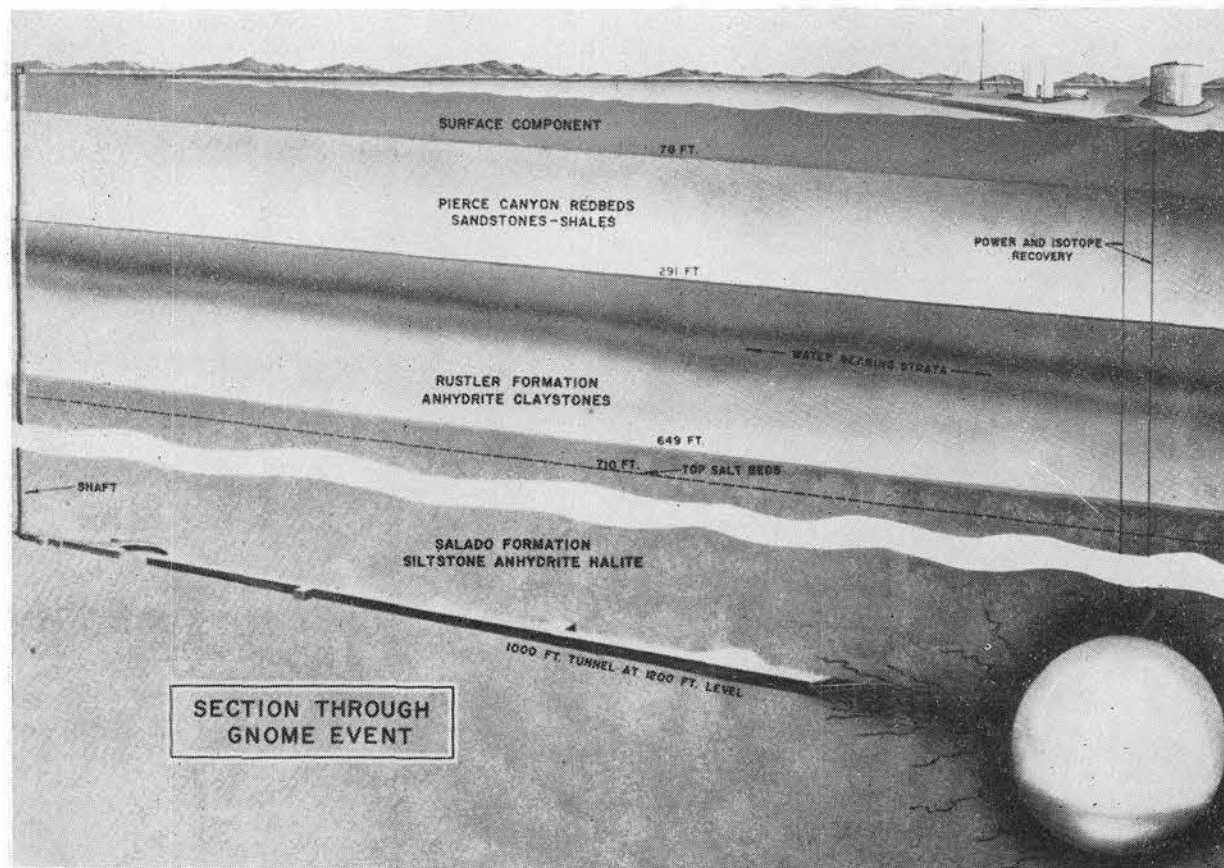
Bill's actions were cited in a recent letter to Sandia from the Wurlitzer Company: "We are convinced that Bill's assistance along with other supervision and fire teams, contributed much in containing a situation that could have been much more serious than it was."



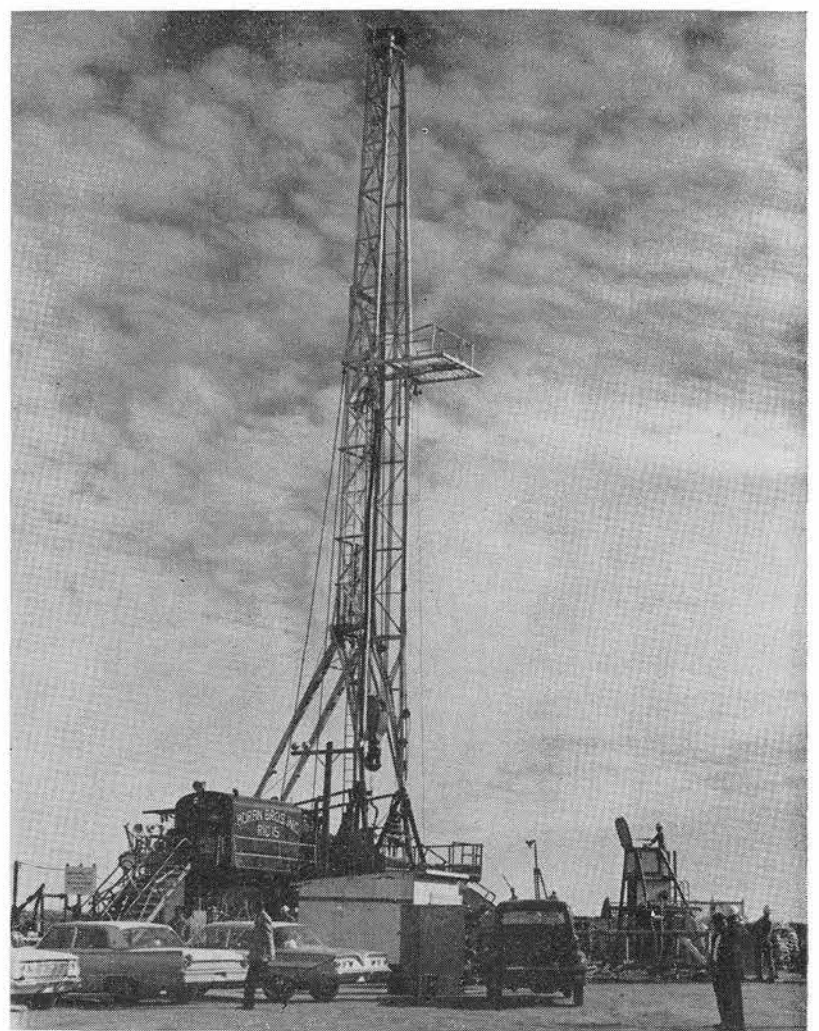
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MAJOR FEATURES of Gnome site geology and facilities for the experiment shortly after the nuclear detonation are illustrated above. Vertical access shaft is at left. Spherical room to be created by blast, at right, is surrounded by fractures. Tunnel to zero room will seal itself at detonation.



RIGGING RISES above ground zero point at Project Gnome site. Equipment is used in conjunction with steam regulating apparatus which will aid in sampling of steam from shot cavity.

AEC Contract Let to Move Thermal Trailer To Area III Location

The apparent low bidder for work associated with a thermal test trailer relocation project at Sandia Lab is the firm of Bradbury and Stamm of Albuquerque. Their bid of \$58,800 was made Nov. 16.

The project will include relocation of a thermal test trailer and some equipment, including metal buildings, a pressure vessel, air compressors, and transformers. The trailer will be moved from Area I to Area III for use by Facilities and Instrumentation Department 7310.

Plant Engineering Department project engineer is C. K. Rudy (4543-1). Work is to be completed within 120 days after the contractor receives notice to proceed from the AEC.

Twisted Knee Ends Livermore Laboratory No-Injury Record

A disabling injury was reported at Livermore Laboratory on Nov. 22 when the Medical Section sent home an employee in Maintenance Division 8222, after he complained of a knee injury. The injury was received Nov. 20. It was reported that he slipped on the mud in Area 8 and twisted his knee. At the time the employee was sent home Livermore Laboratory had worked 109 days, or 570,609 man hours, without a disabling injury.

R. O. Campbell Writes For American Industrial Hygiene Journal

An article by Raymond O. Campbell, industrial hygienist and safety engineer in Health and Safety Section 8241-3, is featured in the current issue of the American Industrial Hygiene Journal.

Ray's article, entitled "A Study of Beryllium at a High Explosive Assembly Test Facility," was based on work done by him at the Lawrence Radiation Laboratory where he was an industrial hygienist for three years before joining Sandia last April.

Ray is a graduate of the University of Washington where he received his BS in public health and preventive medicine in 1956. He received his Master's degree in public health from the University of California at Berkeley in 1958.

Sandia Set for Project Gnome's Crucial Test in Southeast New Mexico Salt Bed

Sandia scientists and engineers are making last-minute preparations for Sandia Lab's part in Project Gnome. If all goes well, the project will be climaxed this Sunday with a five-kiloton nuclear detonation.

The Gnome experiment—part of the AEC's Plowshare Program—is comprised of experiments being made by Sandia Laboratory, Los Alamos Scientific Laboratory, Lawrence Radiation Laboratory, Oak Ridge National Laboratory, and the Stanford Research Institute.

Sandia's part in the project consists of measuring particle motion, temperature, and pressure of the blast at shot time and at specified times thereafter; making micro-barograph measurements; and measuring electromagnetic radiation. Accelerometers and velocity and displacement gauges will measure strong earth motion near the blast. At stations in other parts of the world, seismographs will measure weaker pulses.

Assure Preparations

"We've been working 12 to 14 hours every day to assure that preparations for our part of the project are made just the way we want them," A. D. Thornbrough (7251-1), project leader for Sandia's activities, commented recently. "We're very optimistic about probable results of the experiments." Intensive preparations by Sandia Lab for the experiment

have been under way since early October.

Other Sandians associated with Project Gnome include G. W. Burnside, T. J. Flanagan, R. W. Frame, G. J. Hansen, D. B. List, T. B. Morse, R. G. Oliveira, and C. R. Pickens (all 7251-1); J. A. Kastening and R. E. Foster (both 7251-2); J. A. Beyeler and R. E. Hutchison (both 7251-3); P. R. Kintzinger, M. L. Merritt, W. R. Perret, and W. D. Weart (all 5112); F. C. Rivera and D. R. Salazar (both 2643-3); R. J. Burton, W. R. Drake, J. A. Maxim, F. Shoemaker, and B. S. Snow (all 7254-1); R. E. Williams (7224-3); R. J. Beyatte (7241-3); and E. P. Hubbs (7522-1). Photographers assigned to the project are R. V. Foster and R. S. Booth (both 3465-1).

Objectives Are Five-fold

The five major objectives of the Gnome project are: (1) to explore the feasibility of converting energy from a nuclear explosion into heat for the production of electric power; (2) to investigate the practicability of recovering useful radioisotopes for scientific and industrial applications; (3) to expand data on characteristics of underground nuclear detonations in salt, which has marked differences from the rock at the Nevada Test Site where previous underground detonations have been made; (4) to make neutron cross-section measurements which will

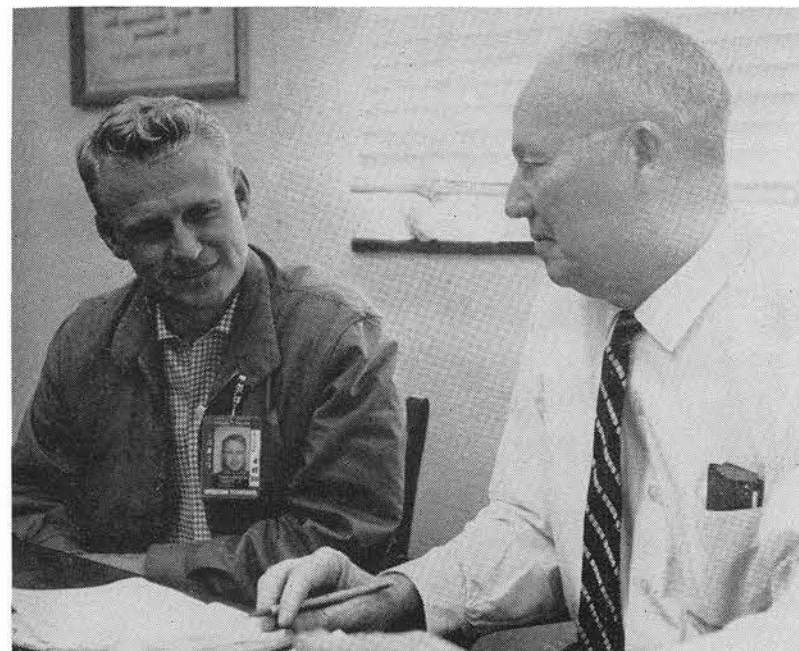
contribute to scientific knowledge and to the reactor development program; and (5) to obtain information on design principles useful in developing nuclear explosive devices specifically for peaceful purposes.

What Is Expected

The nuclear device for Gnome will be fired 1200 ft. below the

earth's surface at the end of a hooked, self-sealing tunnel cut in the Salado salt formation 25 miles southeast of Carlsbad, N. Mex. Calculations indicate that the blast will create a sealed cavity which may remain intact after the detonation.

Until its possible collapse, the (Continued on Page 4)



SANDIA PROJECT LEADER A. D. Thornbrough (7251-1), left, confers with AEC Support Director Ernest Wynkoop about Project Gnome, to be first of the AEC's Plowshare Program activities.

United Community Fund Recognizes Sandia Effort

An Honor Award has been presented to Sandia Corporation employees by the United Community Fund of Albuquerque for "outstanding support of vital community services" during the 1961 UCF drive.

Sandia Laboratory employees contributed \$141,455 during the recently concluded Employees' Contribution Plan drive. Seventy-six per cent of this money will go to the 25 member agencies of United Community Fund with the balance divided between nine other health and welfare organizations.

Editorial Comment

One-Town World

Imagine that we could compress the world's population of more than 2½ billion into one town of 1000 persons in the exact proportions in which the world population is actually divided. In such a town of 1000 there would be only 60 Americans! And these 60 Americans would receive half the income of the entire town. Only about 330 of the remaining 940 town-folk would be classified as Christians. At least 80 town-people would be practicing Communists and 370 others under Communist domination.

The 60 Americans would have an average life expectancy of 70 years; the other 940 less than 40 years. The 60 Americans would have 15 times as many possessions per person as all of their neighbors. The Americans would produce 16 per cent of the town's food supply and, although they'd eat 72 per cent above the maximum food requirements, they would either eat most of what they grew, or store it for their own further use, at enormous cost. (With most of the 940 non-Americans hungry, the food supply disparity might understandably lead to some ill-feeling.) There would be 53 telephones in this one-town world . . . Americans would have 28 of them. The Americans would also enjoy a disproportionate share of electric power, coal, fuel, steel, and general equipment.

The lowest income group among the Americans would be better off by far than the average of the other townsmen. The 60 Americans and about 200 others representing Western Europe and a few classes in South America, South Africa, Australia, and Japan would be relatively well off, by comparison.

Half of the inhabitants of our one-town world would be ignorant of Jesus Christ, but more than half would have heard, and would continue to hear of Karl Marx, Lenin, Stalin, and Khrushchev.

Could this one-town world survive? If you were one of the 60 American town-folk what would you do to preserve this tiny world? Chances are you'd be plenty worried about the problem. Chances are you'd do something. What do you think it would be?

(P.G. and E. Progress)

Expert in Home Holiday Decorations Volunteers Some Advice—Start Early

It's all out for Christmas decorations in the Johnny Anaya family!

Last year Johnny, who works in 4233, won first prize in the southwest area of the city for the outstanding Christmas decorations on his home, despite stiff competition from elaborate displays in the Country Club district.

Johnny made a nearly-life-size nativity scene from plywood. This was a small task for him. He built his own home.

Although he has had some type of home decoration for the past four years, 1960 was the first time he had entered the city-wide Chamber of Commerce competition. Johnny, his wife Clarabelle, and another couple worked until 2 a.m. cutting out the figures and bolting pieces together. Their daughter Pamela, now six, helped with the gluing and son, Dale, now 1½ years old, cooperated by sleeping through the operation.

This year they are adding a life-size Santa Claus complete with sled and four reindeer. With the large nativity scene, 15 strings of blue lights outlining the roof, more than 200 luminarias along the sidewalk and on the roof, and waist-high

hurricane lamps on each side of the front walk, the Anayas should have another prize-winner.

As advice to other prospective outside decorators, Johnny says, "Get started early." His decorations take three weeks to set up and he usually spends New Year's Day taking the display down and storing it.

Sympathy

To Maxine Gatlin (3121) for the recent death of her father in Amarillo, Tex.

To W. G. Foy (7244-1) for the recent death of his mother.

To Leonard Glover (4512-1) for the death of his mother-in-law in Albuquerque Nov. 20.

To Geronimo Alexander (4514-4) for the recent death of his brother in El Monte, Calif.

To J. G. King (2564) for the recent death of his father-in-law in Indiana.

To A. H. "John" Archuleta (2643) for the death of his father Nov. 21 in Albuquerque.

To R. E. Moll (1111-1) for the recent death of his father in Milwaukee, Wis.

To Richard F. Marquez (4221-2) for the recent death of his mother in Tucson, Ariz.



JOINT SANADO-CORONADO CLUB decorations this year feature "Toyland." Sanado President Mrs. Robert Lemm (left) and Mrs. Howard Viney, general chairman for the Christmas decorations, stand beside Santa Workshop wired for animation by A. E. Bentz (7253). Toy soldiers, choo-choo train, Raggedy Ann dolls, and winter scene are elsewhere in the ballroom, lobby, and bar.



Sue T. Mathes (6020/3126)

Take A Memo, Please

Accidents do not happen—they are caused by carelessness, indifference, forgetfulness, recklessness, failure to recognize hazards, and other unsafe habits.

Congratulations

Born to: Mr. and Mrs. James Grier, Jr., (4212-2) a son, Rodney Thomas, on Oct. 27.

Mr. and Mrs. Gilbert Lovato (4231) a daughter, Lauris Ann, on Nov. 4.

Mr. and Mrs. Eloy Barela (4231) a daughter, Bernadette Marie, on Nov. 17.

Mr. and Mrs. Tom Lonz (4131) a son, Gary Joseph, on Nov. 17.

Mr. and Mrs. Donald F. Anderson (2441-2) a daughter, Karen, on Nov. 3.

Mr. and Mrs. Fred Callahan (2333-2) a son, Marvin Frederick, on Nov. 20.

Mr. and Mrs. G. S. Wallace (2534) a son, Dana Trent, on Nov. 24.

Mr. and Mrs. James E. Robinson (4511-2) a son, James D., on Nov. 9.

Mr. and Mrs. Robert E. Wolfe (1112-1) a son, Benjamin, on Nov. 21.

Mr. and Mrs. Robert O. Baca (4254-2) a son, Gregory Joseph, on Nov. 25.

Mr. and Mrs. Norbert F. Siska (2451) a son, David Scott, on Nov. 28.

Weddings

Janet DeValk and Parker E. Wallace were married Nov. 14 in Santa Fe and are now at home



Mr. and Mrs. P. E. Wallace

at 924 Jefferson NE, Albuquerque. Janet (5431) has been with the Corporation for two years; Parker, who works in Division 3211, has been with Sandia nearly 13 years.

Nathana Koen (4251) was married to James Haines (4254-2) in an evening ceremony Dec. 2 at the Sandia Base Chapel. After a honeymoon, the couple will be at home at 5320 Euclid NE.

Nathana has been at Sandia nearly a year; Jim was hired six years ago but was on military leave of absence for several years. The bridegroom is the son of Bea (4112) and Glen Haines (4224).

Rita Smith (3231) and Roger Thorp (4135) exchanged marriage vows at the Grace Methodist Church in Alamogordo on Nov. 23, and are now at home at 1208 Ortiz SE, Apt. F.

Rita has worked for Sandia three and a half years and Roger has been here five years.



25,000TH PASSENGER to board a TWA jet in Albuquerque was W. D. Ulrich (7183), who was enroute to Dayton, Ohio. To commemorate the occasion, Bill received an engraved scale model jet on an ashtray.



OUT FROM STORAGE are these nativity scene decorations. Last year their display at 918 Iron SW and Santa Claus figures which Johnny Anaya won first prize in the country club district. They (4233) and his wife will use in their home holiday hope to duplicate their success again this year.

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LASL Radiation Experts to Discuss Fallout at Public Meeting Dec. 11

A six-man panel of radiation experts from Los Alamos Scientific Laboratory, with a combined experience in radiological protection of some 75 years, will discuss radioactive fallout in a meeting at the State Fair Coliseum here Monday, Dec. 11, at 8 p.m. The meeting is open to the public and should be of particular interest to Sandia employees.

Speakers will emphasize the differences between worldwide, long-range fallout from peacetime nuclear tests, and immediate, local fallout from nuclear bombs in time of war.

Los Alamos Scientific Laboratory has been in the business of detecting radiation and providing protection against it and has been acutely aware of the fallout problem ever since the first atomic bomb at Trinity Site in 1945.

Dr. Thomas L. Shipman, head of the Laboratory's Health Division and a veteran of many atomic tests, will outline the topics to be discussed, introduce the speakers, and moderate the talks.

Dr. Shipman will relate the Rongelap incident of 1954, in which natives on a tropical island and a crew of a Japanese fishing boat suffered radiation burns but no apparent permanent damage. The incident was the result of a wind shift immediately after a hydrogen bomb test in the Pacific.

Using this incident as a real life example, Dr. Shipman and the following speakers in turn will compare it to the local sit-

uation which might follow a nuclear attack.

Carl W. Buckland, LASL section leader for radiation protection and chief of the Los Alamos Civil Defense radiological unit, will describe how fallout is forecast on the basis of wind direction and velocity reported daily from Albuquerque.

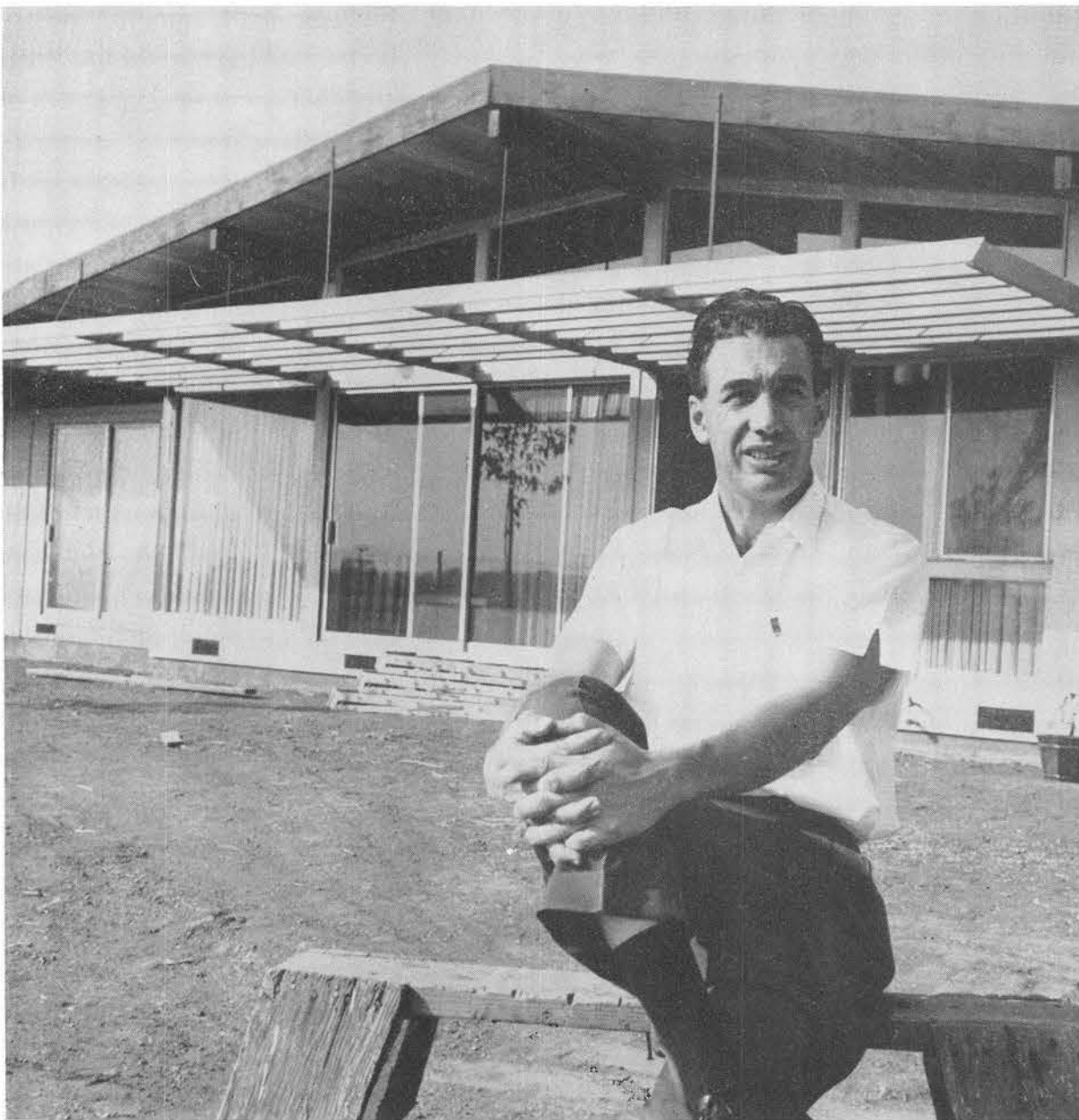
Orin W. Stopinski, head of the Laboratory's meteorological section (the Los Alamos weatherman) and chief forecaster for many atomic tests, will discuss variables and probabilities of fallout.

Edwin A. Bemis, biophysicist and authority on radiation instruments and measurements, will discuss the measurements of radiation doses, dose rates, decay rates, units, and their meanings.

Harry F. Schulte, LASL industrial hygienist who has been engaged in research in this special field for 10 years, will speak on the effects of fallout on food, water, and air.

Clarence C. Lushbaugh, M.D., Los Alamos pathologist and specialist in radiation effects on humans, will describe the symptoms of over-exposure to radiation, particularly fallout.

Note pads and pencils will be available for questions from ushers in the aisles during the talks, which will be answered by panel members after the formal discussions, in whatever time remains. The meeting is being sponsored by the Bernalillo County Federation of Republican Women as a public service.



HARVEY N. POULIOT (8155) is shown in front of the south wall of his four-bedroom home in Livermore. Harvey built the house in a year of intensive spare time work. He estimates eight more months are needed to add finishing touches and landscaping. The house is at 2289 Chateau Way.

When Harvey Pouliot Takes Hammer In Hand Wonderful Things Happen

Harvey N. Pouliot invested one year of spare-time hours and built a beautiful four-bedroom house at 2289 Chateau Way in Livermore.

This is no ordinary house. Clean in concept and beautiful in detail, tailored to the needs of Harvey's family, the house contains just under 2000 sq. ft. of living space. However, enclosed under the one great roof is some 4000 sq. ft. of space. The two-car carport, utility room, and large patio are included.

The only parts of the construction that Harvey subcontracted were the roofing, plumbing, and heating. Everything else—foundation, hardwood floors, gigantic fireplace, brickwork, and wiring, Harvey built. His wife, Marian, helped with the painting and made the drapes and his two sons, Gary 16, and Tom, 12, mixed mortar, carried nails, fetched tools, and did other errands. Even little Michele, 5, helped. His oldest girl, Dianne, participated until she entered San Francisco State College in September.

"It was a family project," Harvey says, "from the planning to the finishing touches — many of which still remain to be done."

California Contemporary

Style of the house is California Contemporary. Construction is board and batten with one brick wall, a great expanse of glass on the south side, and some cinder block. The wood frame as designed by Harvey is not conventional — the building inspector said the original design could support two more stories.

This kind of structural strength and care went into all phases of the house. The hardwood floors are 3/4-in. thick and carefully laid over a sanded sub-flooring.

Harvey gave the cedar planking in the ceiling over the living, dining, and kitchen areas a highly polished hand-rubbed French finish. The kitchen features built-in appliances and oak cabinets with walnut stained finish.

In the center of the living area is the giant ceiling-to-floor fireplace. "We started working on this after we moved into the house," Harvey says. "There's four ton of

rock in there plus a lot of brick and blocks. It took almost four months to build."

The stone is weathered Palo Verde stone from the surface of the quarry. It has an overall grey appearance which contrasts with the polished black of the mantel and raised hearth "stone." Harvey cast these in steel reinforced concrete containing black pigment. He lined the form with heavy wrinkled waxed paper which gave the concrete an appearance of stone.

11-Months Work

The family moved into the house after 11 months of work. Harvey estimates that he still has about eight months to go to finish details inside, to enclose the patio, and to landscape.

"I've slowed down somewhat since starting," he says. "In the beginning I worked late into the night using floodlights to see. For an entire year, I had decided to do nothing else in my spare time except work on the house. During some weeks I spent as much as 35 hours working on the house."

It was a lot of work at a fast pace, more work than most men would attempt. This is nothing new to Harvey. When he was 17, he owned and operated his own auto repair garage. At night, after the customers' cars were finished, he would work until the wee hours building his own car — original from the wheels up, it would do 150 mph. Harvey raced it enough to know.

He has been a mechanic, race driver, machinist, inventor, engineer and engineering designer during his 42 years and he did it the hard way — no formal training since high school.

Harvey is a mechanical engineer to the weapon program in Project Division 8155.

Christmas Dinners For Two Tonopah Needy Families

The Tonopah Test Range (7212) coffee fund this year will provide Christmas dinners for two needy families in Tonopah, Nev. Turkey and all the trimmings will be included.



GIGANTIC FIREPLACE contains four tons of material and took four months to build. Marian and Harvey check fireplace warmth.

Sandia, AEC Players Appearing in New Missile Age Comedy

Stage settings will jump from a Washington, D. C., apartment to a missile bunker at a secret launching site in Alaska during the Albuquerque Little Theatre's forthcoming comedy, "Roman Candle."

Maxine Metz (4322-1) will make her debut as a Washington landlady. One of the leads, that of U.S. Senator Winston, will be played by Judson Ford, AEC-ALOO Personnel Director, who has had numerous roles at the Little Theatre as well as at the Summerhouse, Old Town Players, New Vic Players, and Amateur Players in Ridgewood, N.J.

Another Sandian, Gaynor Atkinson (2331), takes the part of Admiral Trenton.

Dick Foster (3465-1) is Director of Lighting for the Little Theatre productions.

The three-act missile-age comedy will run Dec. 12-17, with curtain time 8:30 p.m. Tickets are available at the Little Theatre box office.

WW II Artillery Converted; Used In Acceleration Tests

Two World War II Long Toms—155mm field pieces — have been taken out of mothballs and returned to active duty at the Tonopah Test Range, firing projectiles in the interest of science.

The guns are being used by Livermore Laboratory to prove out miniaturized telemetry systems under severe acceleration conditions. Engineers at Livermore Laboratory consider the guns to be ideal for the job since they can exert a force of 12,000 g's on test projectiles.

Components to be tested will be mounted in 155mm shells and fired from the guns by propellant charges. The resulting behavior of the test components in flight will be transmitted to ground receiving stations.

The test series, scheduled to begin in mid-December and continue for six months, will be conducted by Test Projects Division I, 8124. Working on the program will

be Ivan French, 8124-1, test conductor; Marv Brieske and Andy Gross of the Telemetry Development Section, 8122-2; Alan A. Hubinger of the Telemetry Component Section, 8122-3.

Range and firing support will be provided by the Test Range Division, 7212, headed by R. D. Statler.

Scheduled for retirement from active use by the Army, the two 30,000-lb. Long Toms were shipped from Benicia Arsenal, Benicia, Calif., to the Tonopah Test Range on two trucks. They arrived Nov. 22 and installation work is now in progress.

Speaks At UNM

Marcel Weinreich (3421-1) spoke on "Nationalism and Internationalism — A Factor in the Formation of Scientific Terminology" before a meeting of Phi Sigma, honorary biology fraternity at the University of New Mexico, on Nov. 29.

Hard Hat Prevents Bad Head Injury at Tonopah Range

Hard hats save lives. This fact was borne out recently at Tonopah Test Range when H. W. "Bill" Pumphrey was struck on the head by a 25-lb. trolley mechanism that slipped from the boom of a rocket launcher. Bill was wearing a hard hat. Chances are he's alive today because of it.

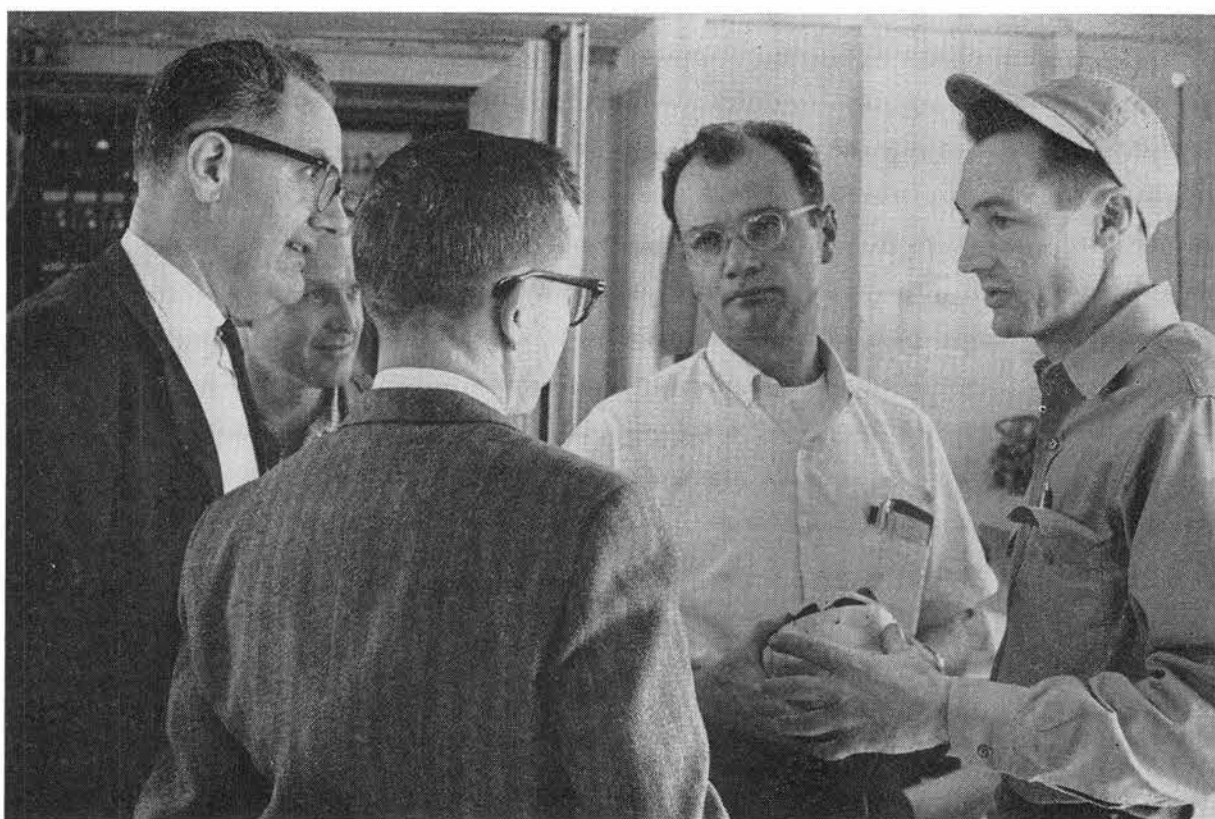
"The trolley rides on a track on the launcher boom," Bill explained. "It's normally prevented from sliding off the track by a pin at the track's end. In this instance, the pin was missing."

"I was working underneath the boom, and when it was moved, the trolley fell off the track and hit the side of my hat. It narrowly missed the shoulder of the fellow working next to me. We were both lucky. I took off the hard hat. There were several deep dents in it. If it hadn't been for the hat, the trolley could have fractured my skull."

Safety precautions have a way of paying dividends when we least expect them.



PRESSURE in Gnome cavity after the nuclear detonation will be measured by equipment being assembled in Sandia trailer at Gnome site by J. A. Kastening (7251-2), left, and J. A. Beyeler (7251-3). Gas pressure in cavity after blast is expected to be in the order of several hundred pounds per square inch.



SANDIA CORPORATION'S Vice President—Research, G. C. Dacey, left, confers with (l to r) A. D. Thornbrough (7251-1), Sandia Project leader at Gnome; T. B. Cook (5110); R. E. Williams (7224-3); and J. A. Beyeler (7251-3) during recent visit to Sandia facilities at the Gnome test site.

Continued from Page 1 . . .

Sandia Set for Project Gnome

cavity will consist of a spherical room some 110 ft. in diameter, containing a pool of molten salt 35 ft. deep, at a temperature of about 1440° F. Approximately 120 tons of water in the form of super-heated steam are expected to be present in the cavity. Source of the steam is one per cent of water originally contained by the salt forming the molten pool.

What Will Follow

The scientists' first task after the detonation will be to secure those records of blast effects immediately available, and to determine whether or not the blast cavity has been formed as anticipated. The success of subsequent experiments and projects connected with Gnome will depend on the formation of the cavity.

Within two weeks after the detonation, scientists hope to drill into the cavity, take gas samples, and bleed down the expected pressure to a level where core drilling is possible. Salt samples from the cavity will be analyzed and compared with samples taken from the zero-point area before the shot.

The power recovery program will be an attempt to determine the amount and distribution of post-detonation energy remaining in the cavity, and to study the possibility of heat recovery from the cavity region for power production. If necessary, scientists will add water to the cavity to increase pressure. Then a controlled flow of steam will be conducted to the surface. No actual power will be produced.

Other Tests

Another part of the post-detonation program involves nuclear experiments using a 1000-ft. vac-

uum pipe placed along the Gnome tunnel. In one millionth of a second, Gnome will produce a flux of neutrons many times greater than that obtainable in a reasonable time from any known laboratory instrument. Neutrons with different velocities will arrive at 500-ft. and 1000-ft. measurement stations in the vacuum pipe at different times.

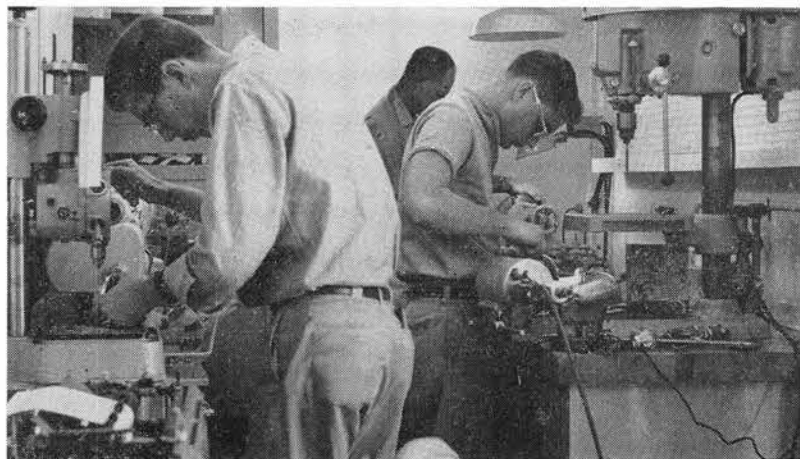
Effects of different energy neutrons will be studied by use of a wheel rotating at high speed in the neutron beam, and at right angles to it. A slitted concrete block in front of the wheel will allow neutrons passing through the slit to hit a small part of the wheel face. Neutrons with different flight times will hit different portions of the rotating wheel. The arrangement will produce a spread-out record of the effects of different

energy neutrons on the material of the wheel.

The post-detonation program will also add to data on underground nuclear explosions. It will comprise measurements of shock pressure, velocity, strong motion, cavity pressure and growth, temperature and radiation studies, subsidence measurements, and earth deformation.

A Peaceful Gnome

The Gnome detonation is expected to be contained underground. There will be no publicly-observable effects such as blast, heat, or flash. Precautionary measures for the blast will include normal radiological-safety procedures; weather-prediction measures; and closure of air space during shot time, even though the possibility of venting during or after the shot is extremely remote.



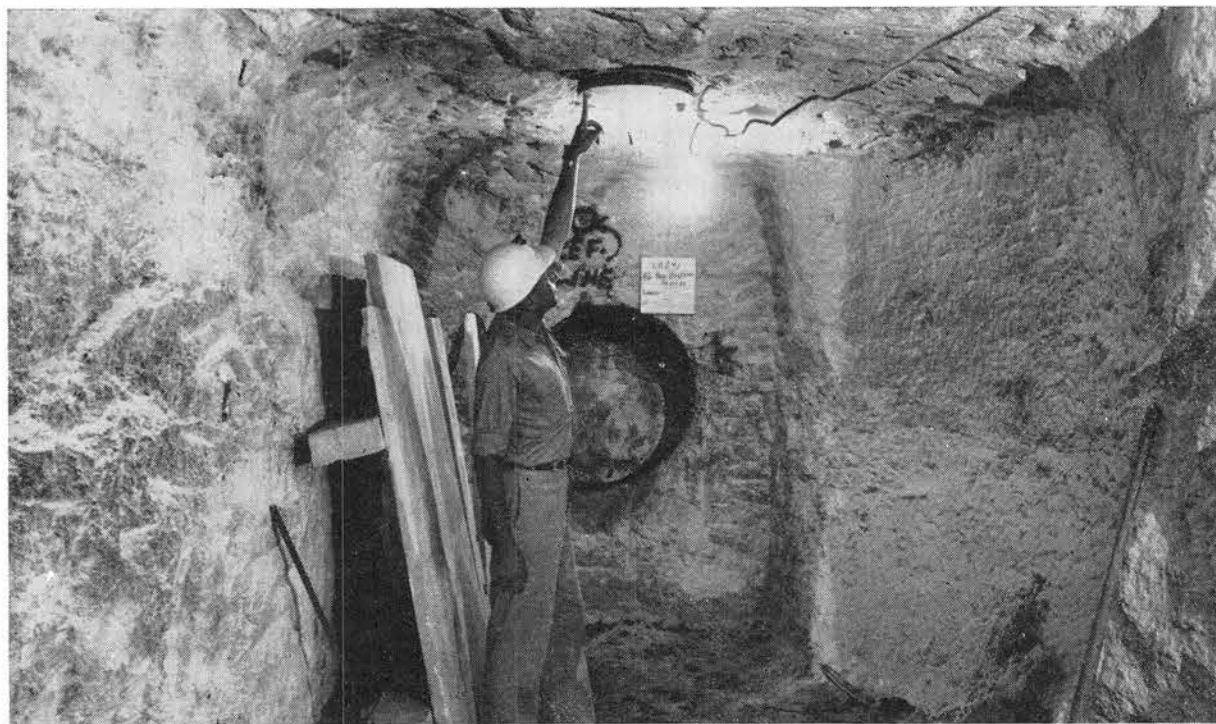
HARD AT WORK in Sandia machine shop trailer at Gnome site are (l to r) R. E. Hutchison (7251-3), R. E. Foster (7251-2), and J. A. Kastening (7251-2). Shop facilities on the job enable Sandians to make modifications on equipment without delay.



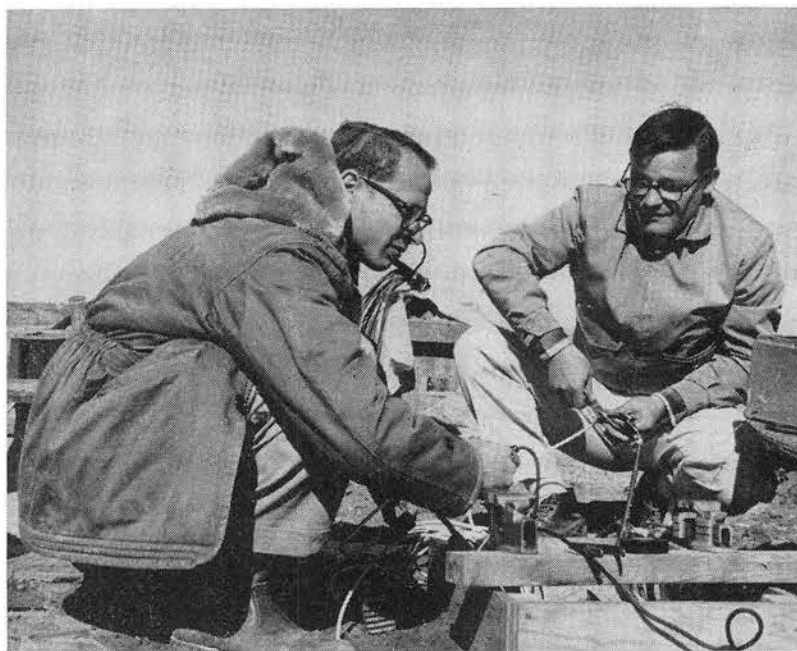
ASSEMBLED long-span displacement gage is calibrated in Sandia shop at Gnome site by R. E. Foster (7251-2), G. W. Burnside (7251-1), and T. B. Morse (7252-1), designer of the gage.



LOGISTICS PROBLEM is pondered in Sandia Corporation office trailer at Project Gnome site by F. C. Rivera and D. R. Salazar (both 2643-3). Both are concerned with logistics coordination.



GNOME ZERO ROOM is about 10 ft. wide, 8 ft. high, and 1,200 ft. below the earth's surface. It will be the repository until shot time of a five-kiloton nuclear explosive device. The workman is pointing to a sample hole leading to the surface. At center, rear, is the 22-in. vacuum pipe to be used for neutron experiments to be carried on in conjunction with the Gnome project.



CHECKING CABLE SPLICE for Sandia instrumentation at Project Gnome are T. J. Flanagan (7251-1), left, and R. J. Beyette (7241-3). Some 29 Sandians are taking part in the test.

Sandia Employees Again Are Preparing Bright Christmas for Many Needy Families

Collection boxes and posters indicate that many Sandia organizations are already well along with plans for Christmas charity projects.

The custom of donating to a worthwhile cause in lieu of exchanging Christmas cards among employees was started several years ago with the thought that this type of activity better preserved the spirit of Christmas.

For the past three years employees in Design Definition Department 4410 have provided Christmas dinners for 20-25 families. A. L. Ouellette (4411-4) is again serving as chairman for the food basket campaign. He is assisted by one representative from each of the sections and Nancy Duhigg (4411), secretary. Dec. 15 has been set as the deadline for receiving contributions to allow time for purchase of needed items and on Dec. 22 the food packages will be delivered. Half of the names of needy families will be supplied by a Catholic parish and half by a Protestant church.

The four departments in A. B. Machen's Military Liaison 2300 organization joined together to collect \$338 to be used to purchase shoes for school children. This is the fourth year this project has been undertaken by the organization. Names of the children are supplied by Desi Baca, principal of River View Elementary School. Robert D. Brooks (2331), chairman, is being assisted by one representative from each of the 11 divisions in 2300. Before Christmas the children will be escorted by several committee members to a local shoe store where they will be fitted.

Quality Assurance (7500) departments have carried out a

Christmas charity program since 1955. At first individual families were located and money was donated for purchase of food and clothing. In some cases used clothing, furniture, and materials to repair homes of the families were supplied — QA employees even made some of the repairs. In 1957 a portion of the money contributed was given to the All Faiths Receiving Home (an organization which is not a part of the United Fund). The committee was so impressed with the work this home is doing that succeeding years' donations were directed there. Last year the entire 7500 organization combined their efforts and donated \$330 to the Christmas Fund for the All Faiths Home. Hopes are high that the amount will be exceeded this year.

Sandia members of the International Association of Machinists and the International Brotherhood of Electrical Workers and other interested employees are asked to bring wrapped gifts to be deposited in marked boxes in their work areas. The gifts will be presented to children at the River View Elementary School during a Christmas party at the school cafeteria on Saturday, Dec. 23, at 1:30 p.m. Gifts will be designated for each of the 400 school children. In addition there will be Christmas socks, ice cream and cookies, and entertainment. Arrangements are being handled by C. M. Judd (4234) for the electrical workers, and Larry Bowen (4252) for the machinists.

Personnel Development Division 3121 has selected the Bernalillo County Juvenile Detention Home as the recipient for their Christmas donations. Between now and Dec. 15 division employees are

asked to contribute clothing, games, books, magazines, and canned goods. Any money given will be used to purchase magazine subscriptions and additional clothing, according to Chairman Gordon Ross. Individual Christmas stockings, containing apples, oranges, candy, and nuts, will be made up for each of the 90 children at the home.

New Year's Eve Party Planned For Coronado Club Members, Guests

Tickets are now on sale for the Coronado Club New Year's Eve party which will be held on Saturday, Dec. 30, from 9 p.m. to 1 a.m. Admission price of \$3 for members and \$4 for guests includes breakfast.

Leigh Sprague's orchestra will provide festive music for dancing. All party-goers will find hats, horns, and balloons at their tables to add to the merrymaking.

Christmas punch and snacks will be served at the ladies' bridge session on Wednesday, Dec. 13, starting at 1:15 p.m. Reservations are required and should be made by Dec. 9 with Mrs. R. W. Mottern, AX 9-8817, or Mrs. B. E. Hickerson, AX 9-0672.

Because of organization parties, no social hour will be held tonight. Next Friday, Dec. 15, Tommy Kelly's combo will play from 5:30 to 8:30 p.m. Social hour is from 5:15 to 6:45, and the regular \$1.75 buffet will be served from 6:30 to 8.

The club's annual free cocktail party for members only will be held Monday, Jan. 1, from 3 to 5 p.m.



AN APPLE A DAY AND TV provide diversion for youngsters at All Faiths Home. Sandia organizations may contribute funds raised by Christmas projects to Home's building program.

All Faiths Receiving Home Seeks Funds to Build on Donated Land

In recent issues of the Lab News, Sandia Corporation employees have been urged to contribute to charitable causes rather than to exchange Christmas cards with fellow employees. The All Faiths Receiving Home, Inc., which presently is conducting a fund-raising drive to finance new facilities, is a worthy recipient of such contributions.

It is not a member agency of the ECP or the UCF.

The Home is inter-denominational. It provides shelter, food, clothing, medical attention, and education for homeless, abandoned, or derelict nonadoptive children referred by police and juvenile authorities. The children live at the Home until adequate family environments can be found for them.

Larger facilities are needed to enable the Home to provide its services to the number of children who need them. An acre of land for a new building has been given to the Home as a memorial. But \$50,000 is needed to build and equip a house, and to provide for more children. All of the money collected during the drive will be used for these purposes.

The Home is administered by a board of 21 volunteer members. Several Sandia employees and employees' wives contribute their efforts as board members and volunteer workers.

Sandia organizations wishing to contribute to the All Faiths Home should contact the treasurer of the board, Mrs. Howard Stump, Jr., P.O. Box 4133, Albuquerque.

Holiday Decorations Being Readied for Laboratory Buildings

Christmas decorations will be going up at Sandia Laboratory next week with lights, color, and music planned.

The decorations will be similar to those of last year. Luminarios will outline the roofs of Bldgs. 800 and 802, red and green floodlights will illuminate the front walls of the Administration building.

Retired employee Matt Ungerman will again decorate the natural evergreen trees in front of Bldg. 800. Inside, an artificial aluminum tree will be placed in the lobby reception room.

Christmas greetings posters will be placed at the guard houses at Tech Area gates 4, 6, 7, and 8 and in addition, for the first time, similar posters will be erected at gates 1, 3, Area II and III.

Although the decorations will be in place from Dec. 18 through 21, Christmas music played over the public address system in Tech Area I and Bldg. 800 reception room will be heard only the week before Christmas. Tapes of seasonal music will be provided by Dean Wise (4231-3).

Arrangements for the decorations are being coordinated by A. L. Romero and Seyfred Toledo of Services and Recreation Section 3122-2.

Tonopah Sandians Planning Holiday Dinner Dance

Tonopah Test Range personnel will participate in the annual Christmas party, Saturday, Dec. 16, at the Civic Center in Tonopah, Nev.

Enjoying the dinner and dancing, Santa and gifts, will be Sandia Corporation, Reynolds Electric, and the Federal Guard Services employees and their families.

All Sandia Corporation personnel in Tonopah at that time are cordially invited to attend the party.

Welcome Newcomers

| Nov. 20-Dec. 1 | |
|----------------------------------|------|
| Albuquerque | |
| *Lucille E. Baier | 5425 |
| Doyle A. Earnest | 4514 |
| Patricia A. Hamilton | 3421 |
| Howard E. Peacock | 4574 |
| Geraldine B. Quisenberry | 3441 |
| Ilse B. Redding | 2563 |
| Mary C. M. Rike | 4424 |
| Susan H. Sommerhalder | 4333 |
| Donald L. Tyler | 3462 |
| Carl R. Wersonick | 3444 |
| Illinois | |
| Thomas K. Devlin, Northfield | 3311 |
| Donald F. Jordan, Downer's Grove | 3453 |
| Oregon | |
| D. Richard Anderson, Corvallis | 1111 |
| *Denotes rehired | |
| Returned from Leave | |
| James E. Uhl, San Antonio, Tex. | 7324 |

Safety Belts Save Barwicks from Injury in Thanksgiving Day Accident

Early this year, Sandians were urged to purchase safety belts for their automobiles. Mr. and Mrs. Reuben B. Barwick of Administrative Methods Section 4112-1 and Employee Processing and Reports Section 3153-2 purchased belts and had them installed in the family automobile. On Thanksgiving Day, they proved their worth.

The Barwicks were returning home from Thanksgiving dinner with friends. They secured their seat belts before driving away. The evening traffic on Miles Road was light, and Mr. Barwick remembers seeing a distant line of cars approaching him. The lead car's lights were on high beam.

"The lights seemed to be wavering, and as the car approached, I saw that it was headed into my lane of traffic," he recalls. "It was impossible for me to pull off the street; all I could do in the time I had was stop. I said 'brace yourself' to my wife and then he struck us."

Mr. Barwick recalls an impression at the moment of impact. "I felt a strong tug around my waist as the car lurched under us. The belts kept us from being thrown into the windshield and dash panel. I didn't have time until later to realize how fortunate we were to be using the belts."

Safety precautions—such as the installation of seat belts—are the best insurance against the unforeseen and unexpected.



SHOES FOR SMALL, NEEDEY CHILDREN in lieu of Christmas cards to co-workers is advocated by members of Military Liaison organization 2300. Mildred Knight is making donation to R. D. Brooks, committee chairman. Group has collected \$338 already.



"MORE AND BETTER" is the 4250 Christmas charity committee slogan. Checking over early contributions for needy families are (l to r) Mary Mayginnis (4253), Walter Kurlfink (4252-1), and Leroy Shoemaker (4254-2). Food, clothes, and money are needed.

Supervisory Appointments

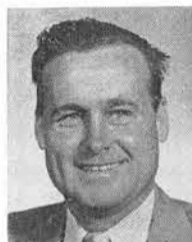
DONALD A. MAYFIELD to supervisor of Range Security Section 7212-5, Tonopah Test Range Division.



Don has been in Sandia's security organizations for 11 years and has been assigned to Sandia Laboratory, Salton Sea Test Base in California, and for the past year, Tonopah, Nev.

During World War II, Don served nearly two years in the Navy. After military discharge he attended Central Junior College at El Centro, Calif., where he received his degree in Associated Arts in 1950.

LOWELL D. WATKINS to supervisor of Data Section 7241-2, Data Reduction Division.



"L. D." worked in the Weapons Training Department when he first came to Sandia five and a half years ago.

Previously he was with Southwestern Public Service Company for 15 years, helping build power plants in Kansas, Oklahoma, Texas, and New Mexico.

L. D. received his BS degree in electrical engineering from Texas Technological College and was awarded his MS degree at the University of New Mexico last June.

During World War II, he served three years in Army Ordnance.

He is a registered professional engineer in New Mexico and Texas.

DONALD C. HANSON to supervisor of Air Force Missile Development Center Operations Section 7244-3, Technical Photography Division.



Don has been with Sandia since March 1959 and was assigned first to Electrical Services Division 7243. He has been in his present division since May.

Previously he was a science teacher for two years at the high school in Elsie, Neb., and also farmed in that same area for nine years.

He received a BS degree in vocational education from the University of Nebraska in 1953 and six years later received a BS degree in electrical engineering from the same school.

Don is a member of the American Institute of Electrical Engineers, the Institute of Radio Engineers, and Eta Kappa Nu and Sigma Tau, honorary societies.

DANIEL D. SHELDON to supervisor of Quality Control Engineering Section II, 2561-2, Manufacturing Development Quality Control Department.



Dan has been at Sandia 11 years and has worked in both Inspection and Quality Control organizations.

Prior to coming here he worked with an Army Corps of Engineers survey crew at Kirtland AFB while completing his studies at the University of New Mexico. He has a BS degree in mathematics.

Dan is a member of the American Society for Quality Control and the American Statistical Association.

He served in the Navy for two years.

FRED A. BENTZ to Senior Buyer 4325, Subcontract Department II.



Fred has been with the Corporation 11 years. He started in Wage Administration, transferred to Reclamation as a reclamation engineer, became a field representative for Purchasing, and then worked in the Industrial Engineering organization. He returned to Purchasing in March 1957 as a section supervisor (buyer).

Previously he was a teaching assistant at the University of California in Los Angeles, and an instructor in industrial engineering at Virginia Polytechnic Institute. Fred also worked a year as a job analyst for Glenn L. Martin Company in Baltimore, Md.

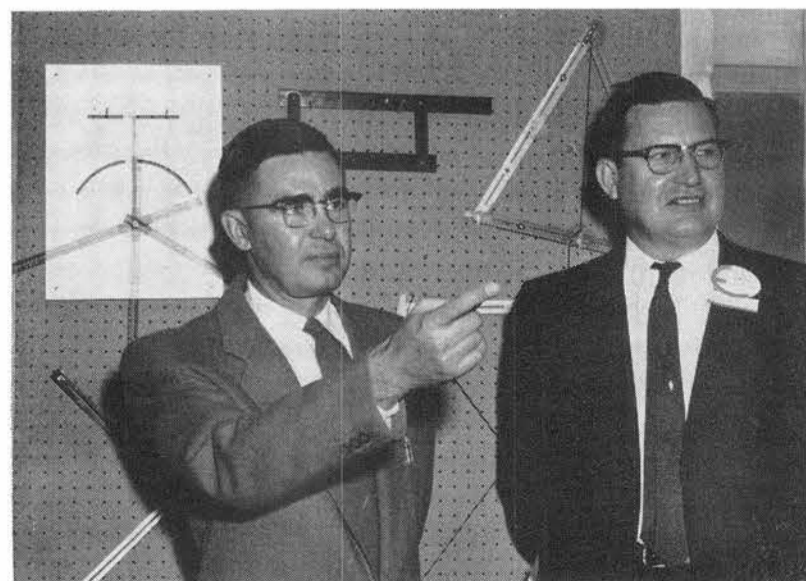
He received Bachelor's degrees in both mechanical engineering and business administration from the University of Minnesota and a Master's in business administration from U.C.L.A.

Fred is a member of the American Society of Mechanical Engineers, the American Institute of Industrial Engineers, and Pi Tau Sigma, mechanical engineering honorary.

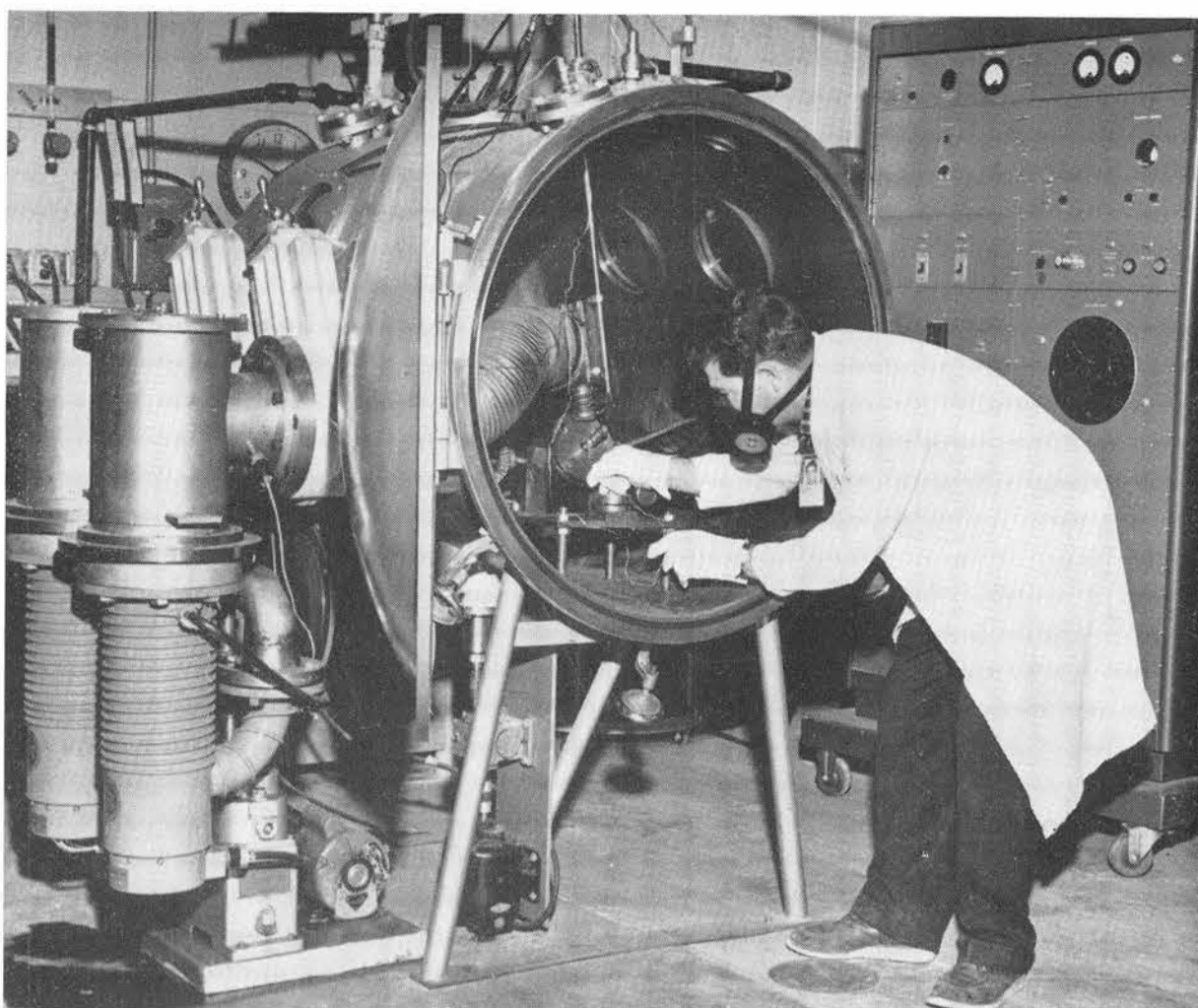
He served 18 months in the Army.

Don Williams Speaks At NYU Nov. 28

Don Williams (7311) presented a technical paper at the College of Engineering, New York University, on Nov. 28. His subject was "Laboratory Simulation of Actual Field Conditions."



FEATURED SPEAKER at a workshop for junior high school mathematics teachers at Eastern New Mexico University was G. M. Wing (5421), left. With him is C. K. Wilson, head of the mathematics department at ENMU. Mr. Wing's subject was "Mathematics and Mathematicians: Fallacies, Facts, and the Future."



AN EXPERIMENTAL WELDING setup is arranged under the electron gun of Sandia's electron beam welder by R. R. "Bob" Salazar, 1121-2. The recently-developed improved pumping system, which pro-

duces a vacuum environment in the tank for the welding process, is at the left. Bob wears a respirator because of residue which has been left in the tank from toxic metals welding experiments.

Innovation Improves Electron Beam Welds

Recently completed, Sandia-designed innovations have greatly expanded the capabilities of the Metallurgy Division's electron beam welding apparatus.

An isolated vacuum-within-a-vacuum has been added to protect all of the system's high voltage parts. Additional vacuum pumping capacity also has been added.

Responsible for the work was D. W. "Doug" Grobecker of the Metallurgy Division's Process Development Section 1121-2. He was assisted by K. D. Boultinghouse of Design Definition Section 4412-1, and R. R. Salazar, also of 1121-2.

The electron beam welding apparatus is housed within a cylindrical tank about three ft. in diameter and four-ft. long. A vacuum environment, which is necessary for the welding process, is produced within the tank.

The principal part of the apparatus is an "electron gun." It contains a filament which produces electrons when an electrical current is passed through it. The electrons are accelerated by the application of high voltages (3000 to 15,000 volts). This stream of speeding electrons then is trained by a focusing device upon a small area of the joint to be welded.

The force or power with which the electrons strike the surfaces to be joined creates the tremendous heat which makes the weld. The material to be welded is moved under the electron gun by a remotely-controlled positioning table.

Has Advantages

Mentioning some of the advantages of electron beam welding, Doug said it affords the precise power control which is required in welding extremely thin metals or foils. It also provides the "punch" needed to make welds requiring deeper, controlled penetrations.

In addition, some metals which are affected adversely by conventional welding methods are welded readily under vacuum by the electron beam process. Also, metals which are toxic or radioactive can be welded with all the toxic products retained in the welding tank or trapped in filters.

The apparatus is complex, however, and can be vulnerable to frequent breakdown.

When metals are welded in vacuum, gasses are released, Doug explained. Before the modifications were made to Sandia's electron beam welder, these gasses caused sufficient variation in the vacuum to permit occurrence of electric arcs and coronas between the high voltage parts. These electrical discharges limited the power input possible, and damaged the welding apparatus.

Two new diffusion pumps have been added to the vacuum system. One of them makes it possible to reach the low pressures required more quickly, and to hold these low pressures with greater stability. The other pump, connected to a housing surrounding the electron gun, protects the high voltage assembly from the very minute surges in the tank's pressure which formerly caused high-voltage breakdown.

The vacuum within the tank now is maintained by the pumps at pressures of less than one ten-millionth of atmospheric pressure. The new system makes it possible to attain this vacuum less than 12 minutes after closing the tank instead of the approximately 30 minutes required before.

Flexible Connection

A feature of the independent vacuum system protecting the electron gun is that it is connected with its pump by a flexible tube. This makes possible 18-in. movement of the gun both vertically and laterally. The gun movement and large tank size permit welding of a great variety of shapes and sizes.

Formerly the rate at which welding power could be introduced

was limited by the apparatus itself. Now, Doug said, the only power limitation for present purposes appears to be what the material being welded can take without excessive splattering or melting.

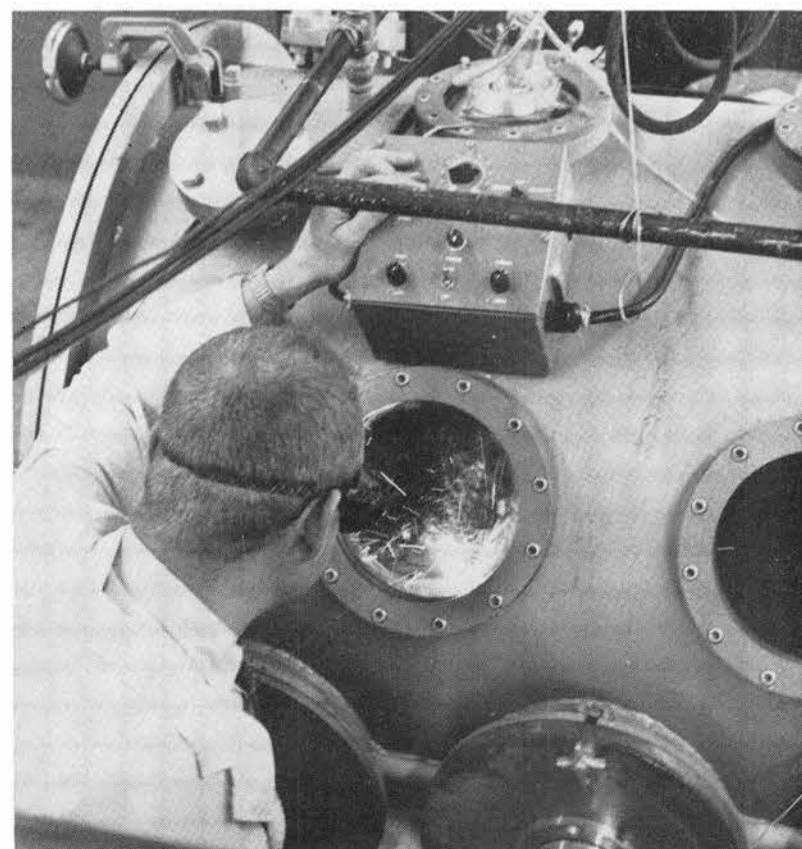
The new system also makes the cleanliness of the metals to be welded no longer such a critical factor. And materials that should be heated rapidly now can be welded without preheating.

The system took about six months to develop with much of the time spent chasing down and eliminating vacuum leaks and shorts in the high-voltage assembly.

"However, we now have a much more usable and versatile tool," Doug said.

Sandia's electron beam welder is being used primarily in studies of joining dissimilar metals. Investigations also are being made with it in the welding of toxic and highly reactive metals, and in its possible use as a tool for sealing components.

Plans for future improvements on the apparatus include development of a cooling system to increase the cooling rate of completed welds, and of a mechanical linkage to increase the flexibility of positioning the electron gun.



A SHOWER OF SPARKS results as D. W. "Doug" Grobecker (1121-2) applies a surge of power during an experiment with the electron beam welding apparatus. The process is done within a vacuumized tank and is remotely controlled from outside.

Christmas Social Festivities Fill Holiday Schedule for Sandia Lab Organizations

A glance at the Coronado Club's schedule of Christmas parties indicates that Chef Rudy Adams and his staff are going to be mighty busy. Nineteen Sandia Laboratory organization parties are on the agenda for the next two and one half weeks.

Dept. 2440 will hold its party in the dining room tonight from 7 to 12, including a social hour, buffet, and dancing to the music of Tommy Kelly's combo. The "Programme" includes competition among the three divisions for the best skit, barbershop singing, square dance exhibition, and other entertainment.

In the ballroom tonight will be Org. 5100's "Research Rebelry." The evening will start with a buffet at 6:30, and dancing will be from 9 to 12 with tunes supplied by Frank Chewiwie. A Christmas skit will be presented during the evening.

Taking over La Cana room tonight is Dept. 5420. A buffet will be served at 7:30, and this will be followed by dancing to recorded music.

Jack Shearing's 11-piece band will be playing tomorrow night for the 4200 dinner dance. Buffet lines will be open from 6:30 to 8:30, and dancing starts at 9.

Dept. 1440's party tomorrow night in La Cana room will begin at 7 with a social hour, followed by a buffet dinner. Entertainment has been planned, and there'll be dancing to recorded music.

Two departments, 7510 and 7530, will hold a joint party in the ballroom on Wednesday, Dec. 13. Tommy Kelly's band will play for dancing from 9 to 1. The dance will be preceded by the regular buffet dinner.

On Thursday, Dec. 14, Dept. 3450 will hold its annual get together in the ballroom. Following the usual pattern of buffet dinner from 6:30 to 8:30, Frank Chewiwie's band will supply dancing music from 9 to 1.

Division 7184 will also hold its party on Dec. 14 in La Cana room. A buffet will be served starting at 7, which will be followed by recorded music dancing.

The annual 1400 Christmas dance, "Component Capers," will be held in the ballroom on Friday, Dec. 15. A social hour starting at 7:30 p.m. will precede the dance. Light snacks will be served during the dance, and there will be a special drawing for door prizes. Tommy Kelly's combo will play for the dance.

In La Cana room on Dec. 15 will be members of Dept. 1330 who will start the evening with a social hour from 7 to 8:30. Buffet lines will open at 8 and dancing to taped music will last until 1.

AEC employees are scheduled for the ballroom on Saturday, Dec. 16. Social hour begins at 7:15, and Jack Shearing's orchestra will play for dancing from 9 to 1.

Another joint party will be held by Depts. 3420 and 3430 in La Cana room on Dec. 16. Social hour will be from 6 to 7:30 p.m. and then a buffet will be served. Dancing to recorded music will round out the evening's activities.

Surprise entertainment and door prizes will highlight the 4400 party on Wednesday, Dec. 20, in the ballroom. The buffet from 7 to 8:30 p.m. will be preceded by a social hour beginning at 6. The MBC Trio will supply dancing music from 9 to 1.

Rex Elder's orchestra will be featured at Dept. 7520's buffet dinner dance in the ballroom on Thursday, Dec. 21. The buffet will be served from 7 to 9 p.m., followed by dancing. Special entertainment is planned during the band's intermission.

Org. 4100's entertainment committee has been busy planning its dinner dance in the ballroom on Friday, Dec. 22. Social hour starts at 6, followed by the buffet from 7 to 8:30. Bud Fischer's orchestra will provide music for dancing from 9 to 1. Drawings for door prizes will be held during the evening.

A nationally-famous unicycle act and other professional entertainment are features of the 2600 party which will be held in the dining room on Dec. 22. Dinner will be served from 6:45 to 8:15, and the floor show starts at 8:30. Tommy Kelly's group will be on the bandstand from 9 to 1 playing danceable music.

A song fest is included on Dept. 1320's party agenda in La Cana room on Dec. 22. Social hour is scheduled from 7 to 8:30, and dinner starts at 8. Dancing to taped music will last until 1.

Members of Org. 7300 will hold a dance from 9 to 1 in the ballroom on Saturday, Dec. 23, with music supplied by Rex Elder's band. Special entertainment will be featured midway through the evening.

Division 3151 has planned a get together in La Cana room on Wednesday, Dec. 23. A hors d'oeuvres table will be set up, and dancing to recorded music will complete the evening.



STRETCH PANTS AND FUZZY HATS, modeled here by Rosemarie Newsom (wife of Max Newsom, 7164-2), left, and Marilyn Pilkington (4413-3), will be highlighted at a fashion show during the Coronado Ski Club meeting to be held Dec. 12.

Fashions For Mountain Slopes Featured At Coronado Ski Meet

A ski clothes fashion show will highlight activities at the Coronado Ski Club's meeting Tuesday, Dec. 12, at the Coronado Club at 8 p.m.

In addition, a ski movie will be shown, and members are invited to bring along unwanted ski equipment for a "swap," according to program chairman George Kinoshita (7164-2).

A one-day ski trip to Santa Fe is planned for Saturday, Dec. 16, (snow conditions permitting). Skiing Committee Chairman Max Newsom (7164-2) is handling arrangements for pooling transportation.

Any person interested in skiing who is a member of the Coronado Club is invited to attend the meeting.

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CLASSIFIED ADVERTISING
Deadline: Friday noon prior to week of publication unless changed by holiday.

RULES

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Corporation and AEC employees only
6. No commercial ads, please
7. Include name and organization.

FOR SALE

COLLIERS NATIONAL Encyclopedia, \$25; double bed w/springs, \$10; accordion, 120 bass, \$150; Venetian blinds, \$2 for two. Heath, AL 5-5418.

LARGEST SIZE spring horse, white w/red saddle, chrome frame, \$15. Shepherd, AL 6-2059.

45 AUTOMATIC PISTOL, Army model, will sell for \$35 or best offer. Holt, AX 9-5943.

60 SEARS MOTORCYCLE, \$165; Bundy clarinet, \$50. Smeltzer, AL 6-3908 after 5:30, 3208 Maderia Dr NE.

WATER SKIS, new, Volt model WS63, \$25 (retail \$40). Pyszki, AX 9-5194 after 5.

BUSCH AND LOMB spotting scope. Sanchez, CH 2-2514 after 5.

56 FORD V8, 4-door, standard transmission, new tires, battery, original owner, 54,000 miles, \$595; Ski boots, junior size 5, \$10. Delker, AX 9-0773.

ELECTRIC TRAIN, American Flyer, two engines, six cars, all mounted on 4x8' plywood board w/village, \$20 or best offer. Richter, AX 9-0409.

FUR NECKPIECE, four squirrel skins w/mink tails, \$20. Dyckes, AX 9-7280.

CHRISTMAS LIGHTS, 3 strings, 13 1/2 yards each, indoor/outdoor, total \$10. Barrett, 265-1391 after 5:30.

HEATH KIT Pre-amplifier and amplifier, 25 watt, completely assembled, \$79. Mitchell, AX 9-8473.

60 GE MOBILE MAID dishwasher. Holmes, DI 4-6995.

AMERICAN ENCYCLOPEDIA, latest annuals, bookcase, 7 vols. Lands and People, all \$100 Radman, AM 8-8970.

GATES TIRES, four brand new 5.60x15 4-ply, nylon, tubeless, white walls, \$75. Collins, 298-5246.

CUB SCOUT UNIFORM, Den mother's outfit, size 14. Gentzler, AX 9-9467.

SS-2 HEATHKIT speakers, pair, w/attached legs, blond, frequency response 50-12,000 cps., \$70. Kreidler, AL 6-2625.

GE WASHER, Filter-Flo, \$60. Shoemaker, 877-2053.

3 BRM HOME, 1 3/4 bath, 2-car garage, wood floor, pitched roof, forced air heat, AC, drapes, large lot, \$16,850. Wilkinson, DI 4-9610.

53 INTERNATIONAL METRO, built-in bunks for 4, running water, ice box, cabinets, needs paint job, paint furnished, \$500 or best offer. McAlexander, 299-2864.

CROSLY REFRIGERATOR with 100 lb. freezer, \$65; electric radiant heater, Sears, \$15; electric lawn edger, \$20. Beasley, 298-3398.

53 BUICK SPECIAL, R&H, 4-door, \$100. Gilpin, AX 9-1100.

BICYCLES, one boy's and one girl's 26", light weight with gear shift and hand brakes, \$20 each or both for \$35. Lucero, DI 4-0480.

59 BSA 175 c.c., windshield, buddy seat, overhauled in March, \$200. Quelle, AL 6-2524.

CHILD'S maple roll top desk w/chair, \$5; doll bathinet and bassinet, both for \$3; 57 Fairlane 500, auto trans., PS, R&H, Tudor blue and white, \$700. Hanna, 256-2733.

AKC REGISTERED male Miniature Dachshund, black and tan, just in time for Xmas, will hold for Xmas. Toggart, AM 8-0963.

56 OLDSMOBILE, Hydramatic, 4-door, R&H. Benton, 435 Lafayette PI NE, AL 5-4466.

BROOD MARE, ROAN; excellent pleasure horse for experienced rider; proved producer of fine Appaloosa foal. Galbreath, DI 4-4306.

HI-FI SPEAKERS and enclosure, AR-2, walnut finish four sides, rated best buy in Consumers' Report, \$60. Scheiber, 6713 Dodd NE, AX 9-4743.

3-PIECE SECTION rattan livingroom set, 1 occasional chair, 2 end tables, 1 coffee table, \$90. Stiver, AX 9-6469.

RANGER TRANS., 75A-1 Rcvr., hi-gain 40-10M vertical ant., D-104 mike, SVR bridge and Lo-pass filter, good price. Greene, AX 9-8747.

SEVERAL hand painted original oil paintings, landscapes, wildlife and bull fight scenes. Womack, AL 6-1548.

ALLSTATE MOTORCYCLE, '59, 125cc, reasonable; electric reducing belt, cheap. Costello, AX 9-0563.

TYPEWRITER, Olympia portable, like new, \$60. Hamm, BU 2-3120.

ROBERSON, 3-bdr, 1 3/4 baths, a/c, carpeting, walled in yard, sprinklers in front, \$14,500, no down payment GI, low down payment FHA. Alexander, 9619 Arvada NE, AX 9-7967.

BANJO, tenor, 5-string, birds eye maple, w/resonator, case, extra strings, lesson books, pitch pipe, hand driven Scrogg's style, \$75. Beckley, AX 9-3440.

ELECTRIC GUITAR with Hi-fi amplifier, \$100. Kerstetter, AX 9-3766.

MAHOGANY, hand-carved, Spanish style dining room suite, 12 pieces includes chairs w/hand-tooled leather seats and back, ideal for adobe home. Ketzenstein, DI 4-1931 after 6 p.m.

52 BUICK Special 2-dr., R&H, \$100. Bell, AL 6-3340.

FRIGIDAIRE washer and dryer. Asche, 265-0990.

GARDENERS paradise, large lot in Hoffmantiown with 3-bdr, 1 3/4 bath, brick home, fully improved, carpeting throughout, covered patios. Grymkoski, AX 9-4053.

57 CADILLAC, Model 62 sedan, R&H, air conditioning, excellent rubber, original owner, 37,000 miles, priced to sell. Henderson, AL 6-4794.

FUR SCARF, genuine Stone Marten, 4 skins, top quality, prize, never worn, appraised at \$400, will take \$175. Cummings, AX 9-7187.

NEXT DEADLINE
FOR SHOPPING CENTER ADS
Friday Noon, Dec. 15

BABY CAR BED and seat, \$6; Baby Teeter Babe, \$3; Irish Mail pumper car, \$9. Weber, AX 9-1389.

MINIATURE BREED PUPPIES, Pomeranian and Chihuahua, \$15, 8 weeks old at Christmas, 2 male, 1 female. Davis, 9406 Claremont NE, AX 8-1957.

8mm MOVIE PROJECTOR, 500w, variable speed motor, stills, reverse, nearly new, \$75. Shaw, 255-0263.

FUR COAT, full-length mouton, dark brown. Hunter, AX 9-3679.

STEREO AMPLIFIER, 14 watts, 30-15,000 CPS; two 8-in. speakers, enclosed, 15 watts, 30-12,000 cps, \$50 for everything. Hughes, 344-8786.

SAMSONITE LUGGAGE, 3 pieces, men's 2-suit, women's wardrobe and a companion case, brown, \$30. Findlay, AX 9-9328.

50 HARLEY 45, runs good, winter windshield, \$225 cash. White, AL 5-9479.

61 PONTIAC Tempest station wagon, deluxe trim and interior, standard transmission, R&H, luggage rack, wsw tires. Suttman, AX 9-6754.

HIGH STANDARD .380 semi-automatic target pistol, trade for old guns, knives, or old coins. Smith, AX 9-1096.

LOT IN valley on Jeanette Ave., 66.65' x 183.72' x 197.75' x 120.34'. Milligan, AX 9-8237.

3 BRM. ROBERSON, 2 years old, family room, 1 3/4 baths, fireplace, built-ins, carpeting, clean. Smith, AX 8-0982.

WASHER, Westinghouse, \$20; playpen and stroller, \$7.50. Roane, AX 9-6554.

52 PACKARD, 4-door sedan, \$165. Chandler, AX 8-1976.

LIONEL TRAIN, complete outfit including 2 engines, 2 transformers, cattle car, barrel car, 4x8 board, spare track, etc., \$50. Lites, AL 5-1201.

26" BICYCLE, girl's Schwinn Racer, \$30; guitar w/case, \$20; girl's leather jackets, sizes 8 and 10, \$5 each. Elliott, AL 6-7909.

60 YAMAHA Motorcycle, many extras, \$275. Pegue, AL 5-2084.

2 BRM. HOME w/garage, clean, has carpet in three rooms. Montano, DI 4-3797, 4821 Grand NW.

ELECTRIC TRAINS, two American Flyers complete w/numerous accessories, will sell at 50% of cost. Groll, AL 5-9638.

GOLDEN HAWK Custom—374 cu. inch McCulloch supercharged Packard engine, PB and PS, spare Packard stick transmission, 160 mph. Hale, 256-7941.

CUSTOM COMPONENT stereo set, Goodman Triaxion speaker, Gerard Changer, Pickering cartridge, AM-FM tuner, two 30-watt power amplifiers, walnut. Sager, ext. 41165.

50 WILLYS STATION WAGON, 2-wheel drive, \$200. Johnson, AL 5-5427.

FREE PUPPIES, half Beagle, 7 weeks old, must go before Dec. 15. Ward, 255-9586.

TIRE CHAINS for up to 800x14, \$5. Sherwin, AL 5-8866.

HUTCH CABINET, solid maple, \$65; double mattress, box springs & frame, \$30. Campbell, AX 8-4446.

TROLLING MOTOR, Elgin 7 1/2 hp w/fuel can and extra oil, \$65. Erne, AX 9-0565.

027" LIONEL equipment, 10 year accumulation, \$100 — 4 trains, 10 automatic switches, 3 transformers, tracks and accessories. Norton, BU 2-3165.

HAMSTER CAGE, 3 stall, \$15; small gas heater, \$10; air cooler w/two-speed motor, \$10. Hawk, AL 6-6264, 1821 Florida NE.

SNOW & MUD tire, 7.50x14, \$10.50; silhouette reducer couch w/timer, \$150 or trade. Welker, AX 9-1179.

TRICYCLE, \$3.50; folding gates for doorway, \$1.50 each. Russell, AX 9-6921, 7738 Robin NE.

56 RAMBLER wagon, red and white, clean, best offer over \$450 takes it. Stixrud, DI 4-7873.

B-FLAT CLARINET, wood, valued at \$150, will sell for \$75. Tucker, CH 7-8687.

"NOSTALGIA" perfume, 2 oz. bottle by Germain Montell; Counselor space saver bath scales, both contest prizes, still boxed. Mitcham, AX 9-8425.

LIONEL "O" gauge Santa Fe freight, extra cars, switches, and accessories, make offer. Rayner, AM 8-1705.

ELECTRIC ORGAN, Magnus, blond w/gold legs, 15 music books, \$100. Brown, AX 9-5405.

UPRIGHT FREEZER, Maytag, 15 cu. ft., \$150; PA amplifier, 6 watts, \$10; dry iron, \$2. Newman, AX 9-2729, after 5:30.

58 RENAULT Dauphine, 4-door, new engine kit, 40 mpg., \$495. Mackay, 13327 Mt. View NE, ext. 53133.

56 PONTIAC, 4-door sedan, auto. trans., 50,000 miles, snow tires on rear, \$550. Gutscher, AL 5-3736.

FEDERAL ENLARGER, 2 1/4 x 2 1/4, timer, trays, tripod, other darkroom equipment, trade for stone cutting equipment or \$60 cash. Langston, 6500 Cochit Rd. SE, Lot 58.

STEWART WARNER console TV, 19", mahogany, \$25; Westinghouse electric roasting oven, \$30. Lawrence, AL 6-2613 after 5:30.

CHRISTMAS PUPPIES, wirehaired Dachshunds, reds, black and tans, AKC registered, shots, champion blood lines. Caldes, BU 2-3272.

SPINET ORGAN, Hammond, walnut finish, M3 model w/percussion, owner must sell, sacrifice at \$995, will deliver. Morewood, AX 9-1734.

TWO COIN automatic timers for washer and dryer, slightly used. Chaves, AL 5-1585.

53 CHEVROLET 1/2 ton pickup, 4-speed transmission, R&H, turn signals, etc., see to appreciate. Causey, AX 9-0089.

60mm TELESCOPE, 35x to 234x, diagonal prism, sun-glass, moon-glass, finder scope, erecting prism, 5 ft. tripod, carrying case, \$75. Strome, AM 8-2689.

55 BUICK SPECIAL, 2-door hardtop, R&H, new brakes and paint, \$395. Kingsbury, 2805 Garcia NE, AX 9-5420.

GAS RANGE, Norge, full-size, clean, \$50. Kraft, AX 9-2157.

GIRL'S BICYCLES, 20", 26", \$12 each; B&H 16mm movie camera, magazine load, \$60; Console 17" TV-radio, mahogany, \$85. Hueter, CH 2-1620.

57 RED TR-3 with black hard top, tonneau cover, white-walls, R&H, special jack and tool kit. Seligman, AM 8-5556.

SINGLE BED, Sealy box spring and mattress on metal frame w/plastic headboard, \$50; girl's shoe skates, size 3, \$8. Merritt, AX 9-6630.

WANTED

USED THERMOSTAT and solenoid gas valve off of floor furnace. Roberts, AL 5-9527.

BABY SITTING in my home, closed in yard, play room, good references. Lerke, 2903 Washington NE, AM 5-0780.

NEED fifth man to join car pool from vicinity North of Candelaria and East of Eubank to 880/892 parking lot. Moyer, AX 8-1778.

USED CANOPY BED, prefer French Provincial. Fulcher, AX 9-8888.

RIDE from corner Second and Indian School Road to Bldg. 880. Howell, ext. 5-2200.

WANTED few acres north of Montgomery, terms to suit or trade car. Brown, 4010 Wellesley NE, DI 4-6831.

RIDERS from vicinity of Morris, Snow-heights, Indian School Rd., NE to bldg. 802. Chadwick, AX 8-1298.

TO TRADE, 2-wheel utility trailer, licensed, spare tire, for 12 gauge shotgun in good condition. Chacon, AX 9-3306 after 5 p.m.

TO JOIN participating car pool from Wyoming-Candelaria area to gate 4 or 5. Cejka, 8509 La Palomita NE, 299-2441.

WONDER SPRING HORSE, large size, must be in good condition. Oelsner, AM 8-6698.

BANJO, also MGTF or TD. Dunaway, AX 9-1422.

MOTHER of boy 3 1/2 will care for child 3 to 5 yrs. old, home near Wyoming and Candelaria. Cejka, 8509 La Palomita NE, 299-2441.

BABYSITTING in my home on Base near Corporation, 2 or 3 children, have walled yard. Smith, ext. 54176.

TO TRADE heavy frame .38 special 6 1/2" barrel, target sights, for .44 Magnum. Britchard, AM 8-6430.

FOR RENT

FURNISHED ROOM and bath, private entrance, walk-in closet, paneled, carpeted, near Bases and University, utilities paid, \$55. Joseph, AM 8-5414.

FURNISHED APT., 5 minutes from Base, 207 Vermont NE, White.

APT., DUPLEX, w/stove and refrigerator, garbage and water paid, \$60 per month. Saavedra, TR 7-0259.

LARGE 3-BRM brick house, double garage, basement, 2 baths, fireplace, ref., range, rug, available Jan. 1, corner Lomas and 11th, \$120. Brown, DI 4-6831.

2-BRM. APT., stove and refig., storage space, near shopping centers, water and garbage paid, redecorated, 528 Cardenas SE, Apt. C. Tillman, AL 5-6292 after 5:30 p.m.

1-BRM. APT., 509 Vermont NE, clean, furnished, all utilities paid, laundry facilities, \$70 monthly. Chaves, AL 5-1585.

3 BDR., built-in kitchen, AC, double patio, near Sandia, drapes, walled yard, 1 yr. old, available immediately. 420 Gen. Stilwell. Klamers, AX 9-5235.

Dec. 15 Closes Health Care Plan Sign-Up Period

The last special enrollment period for employees wishing to join the Sandia Corporation Health Care Plan has been in effect since Dec. 1. Benefits Section 3122-1 reported that 133 applications for coverage had been received at the end of the second day of the enrollment period. The period will end Dec. 15.

During the special enrollment active employees may enroll in the plan, or participants may add eligible dependents not currently enrolled. Enrollment cards are available from department secretaries, and must be returned to Division 3122 at Sandia Lab or 8212-1 at Livermore Lab not later than Dec. 15.

Starting Jan. 1, 1962, employees not enrolled within 31 days from date of hire can be covered only by producing, at their own expense, evidence of insurability which is satisfactory to the Equitable Life Assurance Society. Their eligible dependents' coverage will not become effective until three months after date of receipt by the policy holder of the employee's written election to have the dependent(s) insured.

R. S. Claassen Author Of Article Appearing in Applied Physics Journal

A technical article, written by R. S. Claassen, Director of Physical Research, 5100, has appeared in the November issue of the *Journal of Applied Physics*.

The article is entitled "Excess and Hump Current in Esaki Diodes."

The stated purpose of the paper is: "To suggest a mechanism for the excess and hump current in terms of discreet defect levels in the forbidden band gap similar to those defect levels associated with radiation damage or crystal deformation."

A major part of the data used in the analysis was obtained by H. H. Sander (5433-2) using the Van de Graaff facility.

Mr. Claassen has been at Sandia 10 years. He received his BS degree in physics from Cornell University; his Master's degree, also in physics, from Columbia University; and his doctorate from the University of Minnesota.

R. P. Gall Serving On March of Dimes Committee in City

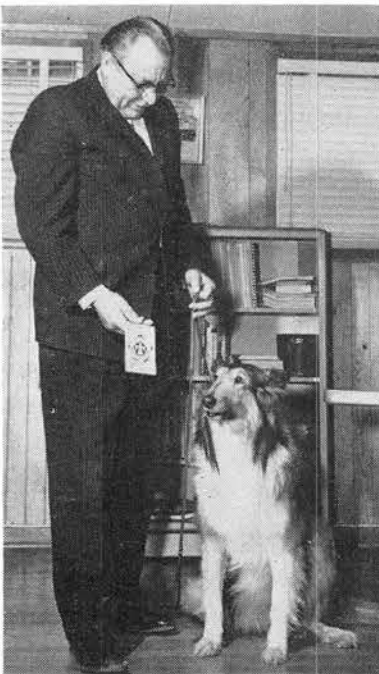
R. P. Gall (3431) has been chosen Bernalillo County publicity chairman for the 1962 National Foundation March of Dimes.

He recently attended a meeting with other volunteer leaders from New Mexico and El Paso to map plans for the 1962 campaign. Contributions will be used mainly for research and medical care for victims of arthritis and birth defects.

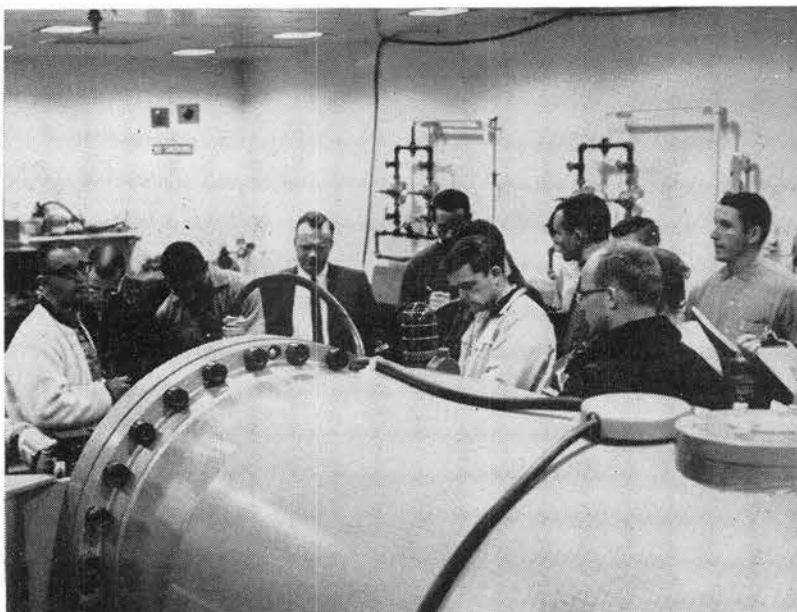
The National Foundation is not a participating member of the Sandia Employees' Contribution Plan.

John Bryson Escorts Four Students to Youth Conference

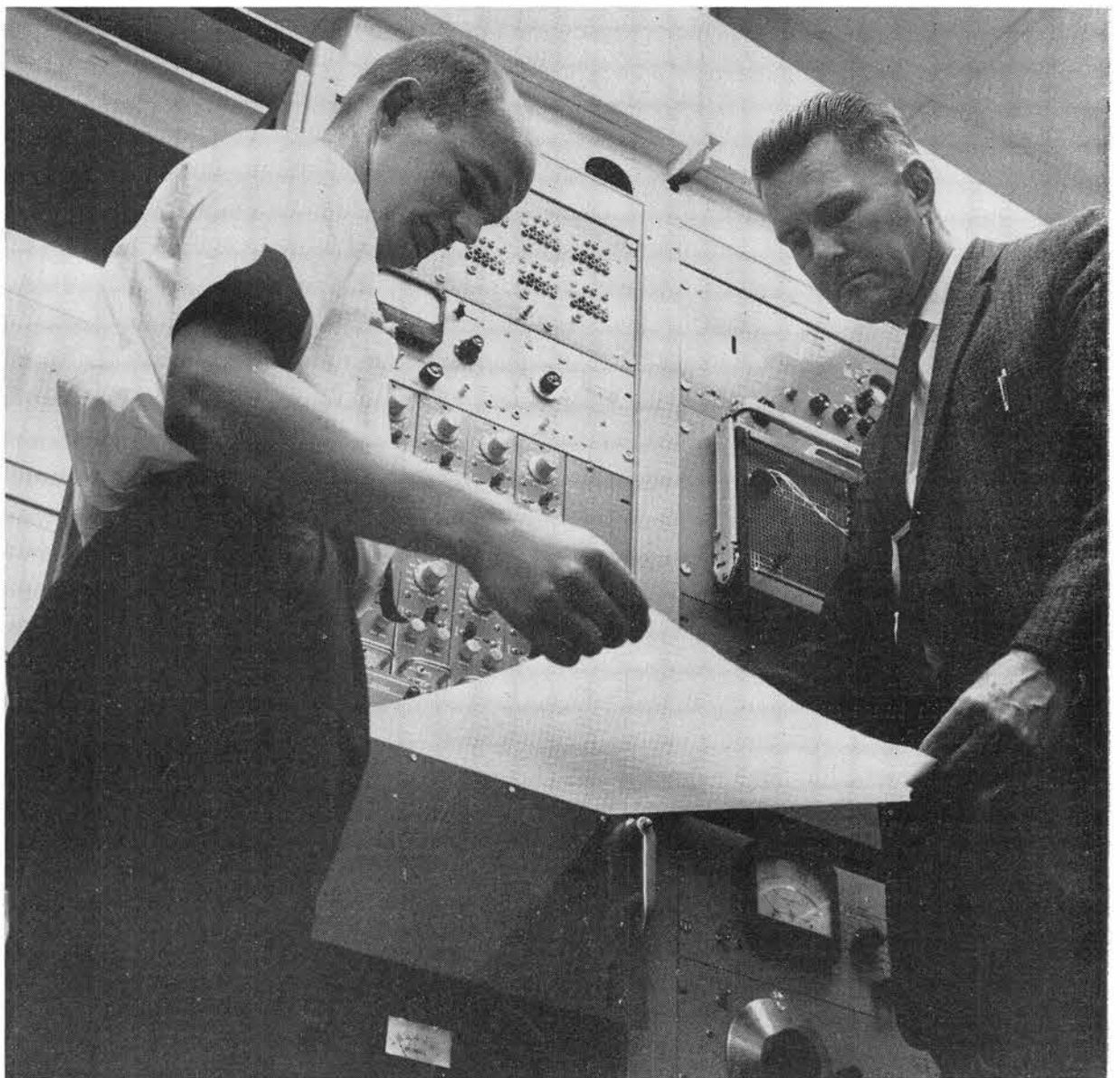
Four Livermore high school students were escorted by John Bryson (8223) to the Governor's Conference on Children and Youth for Community Service held Nov. 13 and 14 in Long Beach, Calif. In attendance were 1500 young people and their adult escorts from all over the state, California Governor Pat Brown, and members of the Governor's Advisory Committee.



ASSUMING THE PROPER DIGNITY for an austere occasion, Kelly, leader dog of Bernice Henry (3423), receives his special five-year service pin from Supervisor Bill Carstens.



UNM BIOLOGY STUDENTS visited Sandia Laboratory last week to see Sphere of Science exhibits and the "Sandia Story" and to hear a talk on reactors by R. M. Jefferson (5431-1). The students are shown above during a tour of the Van de Graaff facility.



LOG-AMPLITUDE RATIO COMPUTER produces transmissibility figure from a vibration test while test is in progress. Process formerly required weeks of hand measurement and computations. Dave Bray (8123-1), left, and Herb Johnston (8122-2) designed and built device for use at Livermore Data Center.

Livermore Lab-Developed Device Able to Perform Nearly Instant Data Reduction

A data-reduction job that used to take weeks is now done almost instantaneously by a new device developed at Livermore Laboratory. Called a "Log-Amplitude Ratio Computer," the machine produces usable data by the time a vibration test on a "shaker" is completed.

A shaker is an environmental testing machine that subjects a component to controlled vibrations. Every component designed by Sandia Corporation must pass the shaker test.

Design engineers are interested in a little more than an answer to the question "Did it fall to pieces?" The test unit must perform within certain specified limits and defined environments of vibration. These are usually expressed in terms of a ratio or "transmissibility" figure. This figure represents accelerations experienced by the test unit divided by the vibration input of the shaker table.

In the past, getting this information was tedious and time consuming. The vibration data was obtained by recording accelerometer outputs on oscillograph paper. The peaks from each of these graphs had to be measured with an oscillograph reader and the figures punched on IBM cards for reduction by the old Elecon computer.

Quick Results

Nowadays, the Log-Amplitude Ratio Computer can handle as many as 16 recording channels from accelerometers mounted on the test unit and shaker table, convert this information into logarithmic expressions, and produce graphs from each recording channel which gives a continuous transmissibility plot for the entire test.

At the end of the shaker test, the test engineers can walk from the testing area to the Data Center in Bldg. 914 and pick up the results of their tests. (Recording instrumentation for all environmental tests conducted at Livermore Laboratory is located in the centralized Data Center operated by Section 8123-1 in Bldg. 914.)

The machine was conceived by Herbert E. Johnston about two years ago and developed into a workable prototype model. Herb was transferred from 8123-1 to Telemeter Development Section 8122-2 and Dave Bray, who had just signed into Livermore Lab after graduation from Oregon State University, took over the project and checked out the original computer. Herb's work had paved the way for several modifications and improvements that brought the Log-Amplitude Ratio Computer to its present development.

Graph Form Information

"The advantage of using a logarithmic scale to record data," Dave says, "is it greatly expands the dynamic range of information that can be obtained in graph forms. This way, even small peaks recorded on the graphs are meaningful."

The Log-Amplitude Ratio Computer also has overcome one of the big headaches in recording data measured by an accelerometer — "overdriving" or saturation of the equipment caused by unexpectedly high peak outputs. This not only invalidates the data

in the overdriven channel, but also interferes with data from other channels in a FM multiplex recording system.

The new Log-Amplitude Ratio Computer, through its programmed internal electronics design, overcomes these difficulties.

Another advantage of the system is the elimination of possible human error from the great number of individual measurements and computations that formerly had to be made by hand.

Space available in the Data Center caused a problem in packaging, but computer section, recorders, graph-producing mechanism, and other associated electronics are tightly fitted into two and one half racks that take up about as much space as a refrigerator.

Even with the success of the machine to date, Dave Bray isn't satisfied.

"We're thinking now," he says, "of three new approaches possible with the computer. Each would provide additional information from the tests and give the design engineer a better picture of the performance of his component."



GEODESIC PATIO COVER at Livermore Lab, recently installed in the recreation area south of Bldg. 912, makes possible year 'round use of the patio area during the lunch hour. Relaxing in the shade are, from left, Dale Anderson (8232-2), Dennis Sparger (8232-2), Teresa Pasqual (8232-1), and Sarah Thomsen (8231-1).

Sandia's Safety Record

Sandia Laboratory HAS WORKED 1,015,000 MAN HOURS OR 29 DAYS WITHOUT A DISABLING INJURY

Livermore Laboratory HAS WORKED 51,500 MAN HOURS OR 13 DAYS WITHOUT A DISABLING INJURY